

pygidium of the adult female which should assist in the recognition of the species, is included.

Genus **Chrysomphalus** Ashmead.

Chrysomphalus aonidium (Linn.)

This very common and widespread species was found in two lots of material from Buenos Aires, collected in May, 1911, one on *Olea fragrans* (Jorg. No. 20), and the other on *Citrus aurantium* var. *dulce* (Jorg. No. 21).

Chrysomphalus dictyospermi var. **pinnulifera** (Mask.).

As the status of this form is somewhat doubtful, and is at present the subject of some study on the part of coccidologists, the writer has followed Lizer¹ in giving Maskell's name to it. The record is based on a single collection from Buenos Aires, May, 1911, on *Citrus aurantium* var. *dulce* (Jorg. No. 21).

Chrysomphalus paulistis Hempel.

This species was collected by Sr. Jorgensen at Buenos Aires, May, 1911, on *Ligustrum paniculata* (Jorg. No. 4) and on *Laurus nobilis* (Jorg. No. 7). It has already been recorded from Argentina and has been figured by Lizer.

EXPLANATION OF PLATE.

Fig. 1-7, incl.—*Lecanium viticis*, new species.—1. larva, outline dorsal and ventral, X 80; 2. same; marginal and spiracular spines, X 360; 3. adult female, marginal seta, X 360; 4. same, antenna, X 80; 5. same, leg. X 80; 6. same, marginal and spiracular spines. X 153; 7. same, anal plates, X 153.

Fig. 8, 9. *Leucaspis pusilla* Loew.—8. pygidium of preadult female X 230; 9. pygidium of adult female, with additional figures showing variation in marginal fringe, X 230.

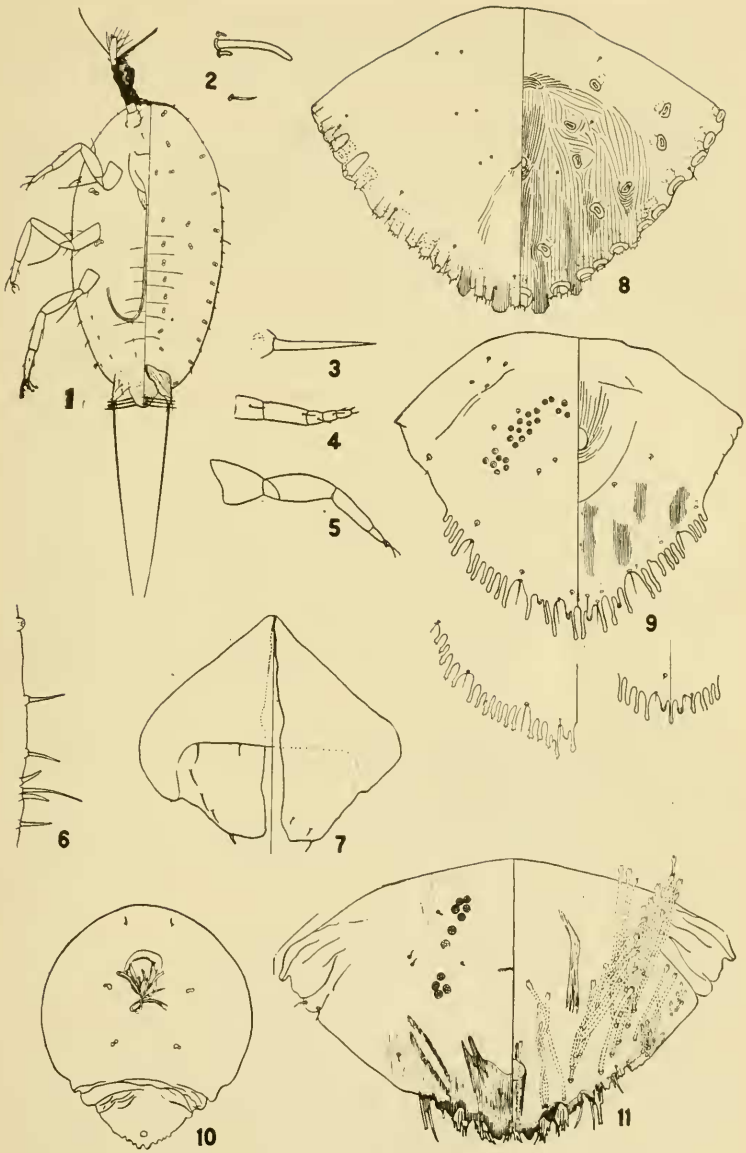
Fig. 10, 11. *Aspidiotus latastei* Ckll. 10. adult female, outline of body, X 40; 11. same, pygidium, X 153.

THREE NEW TERMITES FROM THE CANAL ZONE, PANAMA.

By THOMAS E. SNYDER, *Bureau of Entomology.*

In recent papers, as yet unpublished, the habits of 22 species of termites from the Canal Zone and nearby portions of the Republic of Panama have been described by the writer in collaboration with Messrs. H. F. Dietz and J. Zetek. Most of

¹Physis, Comunicaciones. No. 10 t. II. p. 177, Feb., 1916.



MORRISON—ARGENTINE COCCIDAE.

the collections have been made incidentally in connection with other duties by Messrs. Dietz, Zetek and I. Molino while stationed in the Canal Zone, in the employ of the Bureau of Entomology.

Dr. W. M. Wheeler is now at Panama and with Messrs. Zetek and Molino has explored some of the small islands with virgin flora and other little disturbed sections; three new termites have been found, making a total of 25 species for Panama. Two new species were found on Barro Colorado Island, C. Z., near Frijoles, C. Z., on March 20, 1923, and one new species at Frijoles, C. Z., on March 28, 1923.

Dudley and Beaumont in 1889 and 1890 published papers on their observations of the termites of the Isthmus of Panama. Unfortunately the biological notes were not correlated with specimens of the termites. Large mounds or nests made by "*Termes columnar*" over 5 feet in diameter at the base and nearly 4 feet high, at Ceyroyal Station of the Panama Railroad (on the Pacific Slope), have never been rediscovered or the identity of the termite that made them determined.

Doubtless when the outlying districts of Panama are carefully explored, other new termites will be discovered. Panama is an ideal location for a tropical research station for biological study.

Although of relatively small area, 14 genera of termites occur at Panama, represented by 25 species. Some of the species of *Leucotermes*, *Coptotermes* and *Nasutitermes* are extremely destructive to both living crops, timbers and other woodwork of buildings.

While in the United States there are 11 genera of termites and 40 species, termites are not as abundant in the temperate United States as in tropical Panama.

The three new species collected at Panama by Dr. Wheeler and Messrs. Zetek and Molino are *Mirotermes panamaensis* Snyder, *Orthognathotermes wheeleri* Snyder and *Anoplotermes parvus* Snyder.

Species of *Mirotermes* Wasmann are widely distributed throughout the southern hemisphere and also occur in Central America. At Panama the species *M. hispaniolae* Banks also occurs.

Species of the genus *Orthognathotermes* Holmgren are restricted to America. Only 3 species have been described and they are all from South America. The new species from Panama is the first record of this genus from Central America and I have taken pleasure in naming it after Dr. W. M. Wheeler.

Twelve species of *Anoplotermes* Fritz Müller have been described from America, two species only have been found at Panama—*A. gracilis* Snyder on the Pacific Slope and the new species *A. parvus* Snyder on the Atlantic Slope; small mound

nests are constructed by the latter species in Panama, while the former lives in the ground.

Mirotermes panamaensis, new species.

Soldier.—Head pale yellow, darker (yellow-brown) near anterior margin, sides nearly parallel, slightly wider anteriorly, anterior process larger than in *nigritus* Silvestri, with dense long hairs; head more robust (higher) than *nigritus*, with few scattered long and short hairs.

Labrum yellow, elongate, with two lateral, narrow, elongate lobes, concave in center, with long hairs.

Mandibles black, elongate, slender, bowed, incurved at apex.

Antennae yellow-brown, 14 segments, pubescent; third segment shorter than second, slightly longer than fourth; from fifth on segments become longer and wider towards apex; last segment elongate, narrow and pointed at tip.

Pronotum white with tinge of yellow, saddle-shaped, slightly emarginate anteriorly, with long hairs.

Legs white with tinge of yellow, claws brown, elongate, slender, pubescent.

Abdomen dirty grey-white with tinge of yellow, with dense short hairs and also a row of long hairs on tergites, latter at base of tergites.

Measurements: Length of entire soldier, 5.1-5.6 mm.; length of head with mandibles, 2.90-3.3 mm.; length of head without mandibles (to anterior), 1.50 mm.; length of left mandible, 1.80 mm.; length of pronotum, 0.30 mm.; length of hind tibia, 0.85 mm.; width of head (at widest portion), 0.90-0.95 mm.; width of pronotum, 0.60 mm.

Larger, with head lighter colored and more robust than in *nigritus* Silvestri, mandibles longer.

Type locality.—Barro Colorado Island, C. Z., Panama.

Described from a series of soldiers collected with workers by Wheeler and Zetek at the type locality, on March 20, 1923. Barro Colorado Island is in Gatun Lake, 1½ miles from Frijoles on the Atlantic Coast. In lower portion of termitarium of *Anoplotermes parvus* Snyder.

Type, soldier.—Cat. No. 26257, U. S. N. M.

Orthognathotermes wheeleri, new species.

Soldier.—(Plate 1, fig. 1). Head yellow posteriorly, darker (yellow-brown) anteriorly, widest posteriorly, tapers slightly anteriorly, narrower than the head of *O. macrocephalus* Holmgren; upper borders of antennal sockets prolonged into flattened tubercles or projections; these tubercles are narrower than in *macrocephalus*. Head with white, slightly raised eye spots posteriorly to the tubercles, more prominent and closer together than in *macrocephalus*. Trace of frontal gland. Head with few scattered long and short hairs.

Labrum yellow-brown, slightly broader than long, weakly 3 lobed, central lobe largest, roundedly projecting, with long hairs.

Mandibles black, bases with reddish tinge, long, bowed in the middle, with a marginal tooth at the bend; strongly incurved at tips; denticulations on margins of left mandible near base more prominent than in *macrocephalus*.

Antennae yellow-brown, 15 segments, pubescent; third segment shorter than second or fourth; from fifth segment on segments become wider and longer; towards apex, however, segments become shorter and narrower.

Pronotum yellowish, saddle-shaped, anterior margin emarginate, with dense long hairs.

Legs white with tinge of yellow, claws brown, legs elongate, slender, pubescent.

Abdomen dirty white, with dense long hairs.

Measurements: Length of entire soldier, 8.5 mm.; length of head with mandibles, 4.9-5.0 mm.; length of head without mandibles (to tip labrum), 3.0 mm.; length of head without mandibles (to anterior), 2.4-2.5 mm.; length of left mandible, 2.5 mm.; length of pronotum, 0.4 mm.; length of hind tibia, 1.4 mm.; width of head (at widest portion), 1.8-1.9 mm.; width of pronotum, 1.1-1.2 mm.

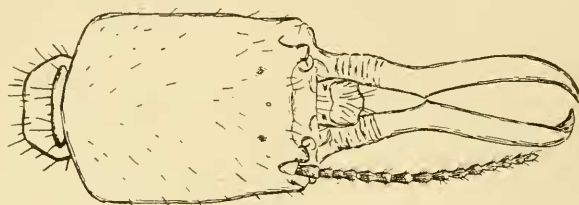


Fig. 1. *Orthognathotermes wheeleri* Snyder. Soldier dorsal view of head and pronotum. Drawn by Miss E. T. Armstrong.

Most closely related to *O. macrocephalus* Holmgren of Bolivia; named in honor of Dr. W. M. Wheeler.

Type locality.—Barro Colorado Island, C. Z., Panama.

Described from three soldiers collected with workers by Wheeler and Zetek at the type locality, on March 20, 1923. Barro Colorado Island is 1½ miles from Frijoles on the Atlantic Coast. In termitarium in earth; there was no definite structure above ground.

Type, soldier.—Cat. No. 26258, U. S. N. M.

Anoplotermes parvus, new species.

Winged adult.—Head greyish-black, slightly longer than broad, broadest at eye, broader than pronotum, rounded posteriorly, with dense long hairs, fontanelle small, indistinct, linear spot in depression, nearer posterior margin of head than in *A. gracilis* Snyder. Post-clypeus grey, nearly three times as broad as long, shorter than in *gracilis*, not greatly projecting, posterior margin deeply concave, with long hairs. Labrum yellow, tongue-shaped, broadest near base, with long hairs, extends to tip of mandibles. Mandibles yellow castaneous-brown at tips, short.

Eyes purplish-black, large, projecting, very near lateral margin head, much closer to anterior of head than to posterior. Ocelli large, elongate, with pro-

jecting upper rim, separated from compound eye by distance less than their short diameter, placed obliquely to eye.

Antennae grey-brown, 15 segments, pubescent; third segment very small, half length of fourth segment; fourth segment half length of second; segments become broader and longer towards apex; last segment conical.

Pronotum grey-brown, not twice as broad as long, broadest anteriorly, somewhat semi-circular in shape, shorter than in *gracilis*, anterior and posterior margins nearly straight, with long hairs.

Meso- and meta-nota grey-brown, posterior margins emarginate, pubescent.

Wings dark, margins ciliate, surface with hairs; fore wing median nearer to cubitus than to sub-costa, branched to apex, cubitus does not reach apex, 6 branches to lower margin.

Legs grey-brown, elongate, slender, pubescent.

Abdomen grey, with dense long hairs.

Measurements: Length of entire winged adult, 6.75-7.50 mm.; length of entire deälated adult, 4.50-5.0 mm.; length of head (to tip of labrum), 0.77-0.85 mm.; length of left mandible, 0.37 mm.; length of pronotum, 0.32-0.35 mm.; length of hind tibia, 0.70 mm.; length of anterior wing, 5.5-5.75 mm.; length of wing scale, 0.32 mm.; diameter of eye (long diam.), 0.17-0.20 mm.; width of head (at widest portion), 0.65-0.70 mm.; width of pronotum, 0.60-0.65 mm.; width of anterior wing, 1.55 mm.; length of queen, 13.0 mm.; width of queen, 2.80 mm.

Darker colored and smaller than *A. gracilis* Snyder, also of Panama; the queen and male are lighter colored (more brown) than the winged adults.

Type locality.—Frijoles, C. Z., Panama.

Described from a series of male and female winged adults collected with workers at the type locality by Dr. W. M. Wheeler and Mr. I. Molino, on March 28, 1923. One first form queen and male found together in a cell in the termitarium on the ground. The termitarium was of soft, black earth-like substance, at the base of a tree.

Type, winged male adult.—Cat. No. 26259, U. S. N. M.

NOTES ON THE DISTRIBUTION AND HABITS OF NORTH AMERICAN PHYLLOTRETA (COLEOP.).

BY F. H. CHITTENDEN.

The flea-beetles of the genus *Phyllotreta* inhabiting America, north of Mexico attract periodical attention by their ravages, and the Bureau of Entomology has given them some study in recent years in regard to their occurrence on cruciferous crop plants. The late H. O. Marsh studied particularly the forms occurring in Colorado; M. M. High devoted some attention to those occurring in Mississippi and Texas, and certain economic species which occur in Louisiana, the District of Columbia and elsewhere have been studied and are still the subject of research.